REMARKS/ARGUMENTS

Addressing Examiners remarks starting with ¶ 2, Claim 13 is amended to cure the informality.

Claims 1 is amended to further restrict the operation of the phase modulator to include a photodiode and incorporate dynamic feedback between the photodiode and the phase modulator. Yamada does not teach a photodiode optimizing a light beam by dynamically controlling a phase modulator through a controller. Yamada does adjust his heaters dynamically; however this is done manually and is clearly unacceptable as noted by, "Although the dynamic method offers flexibility in terms of phase control, it is not suitable for use in realizing a stable and easy to operate device." (p367, 3rd ¶). Please note, Yamada teaches a chromium thin film heater on top of the cladding of a wave guide in combination with a poly-silicon thin film which must be laser trimmed while observing the phase shift. Yamada's teachings are clearly not practical for a commercial device. Also please note the instant invention claims a "phase modulator in the optical path" (claim 1). Neither Yamada nor the other cited references has a phase modulator in the optical path.

With regard to claim 10 and Yamada's Figure 1, while each of the waveguides has two curved sections it appears that the radius of curvature of each waveguide is slightly different; note the difference between the first and last waveguide. Yamada is quite explicit about mentioning control of the optical path length for each waveguide; Yamada does not mention that careful control of the radius of curvature of each waveguide is critical; one should not assume Yamada controls this parameter with extra diligence when he does not mention it.

Claims 3 and 4: Yoo teaches, [0035], "The phase modulators 56 *(probably should be 46)* are controlled according to a CDMA code 56. Yoo is teaching a method to encode and decode an optical signal based on a CDMA code using a phase modulator. Yoo has no photodiode, no dynamic feedback and has no interest in optimizing a light signal to a photodiode.

Claims 15 and 16: Please note the entire [0202] from Welch:
*[0202] It should be pointed out that, in connection with FIG. 52, **photodetectors 16(1) . . . 16(N)** of an as-cleaved chip can be initially employed to examine the total signal and differential signal between detectors to tune the wavelength grid of AWG 30 **via TEC 30A. The temperature of AWG 30 is changed** so that its wavelength grid best matches the wavelength grid of the channel signals to be demultiplexed. In order to accomplish this grid tuning, it is preferred that at least two of the channel signals need to be detected. Once the AWG wavelength grid has been optimized to **a standardized grid**, such as the ITU grid, **the factory setting for TEC 30A is placed in memory** of the RxPIC controller circuitry.*

Please note several critical differences between the instant invention and Welch:
a) TEC 30A is a "thermoelectric cooler" in contact with the entire AWG 30; there is no individual control of each waveguide.
b) The AWG is optimized for a given "standardized grid" as opposed to dynamic optimization of the signal coming through each waveguide.

c) The optimization settings are stored in memory; besides no dynamic optimization, the AWG is only optimized for one "standardized grid" and one ambient temperature.
d) In operation in the field the photodiodes simply convert a light signal to an electrical signal for off-chip processing. [0110] & [0124].
Welch's photodetectors are connected to each waveguide for signal detection and conversion into an electrical signal to propagate off-chip [0124]. Dynamic control of each waveguide based on a signal level in a photodiode is never mentioned or suggested.

Claims 1, 15 and 16 have been amended to add dynamic control with feedback from a photodiode as a further limitation.

With regard to claims 7 - 9: Koga does not teach or suggest dynamic control of resistors on the waveguide or heaters adjacent to the waveguide based on optimizing a signal to a photodetector.

With regard to claim 14: Myrick's application has lapsed due to non payment of allowance fees; Myrick failed to enable his claim of a structure of multiple interspersed layers of dielectric and single crystal silicon which is probably why he didn't pay the allowance fees. Claim 14 is amended to define the layered structure more explicitly.

Applicant has added additional restrictions to independent claims 1, 15 and 16; canceled claim 2; amended dependent claims 5, 6, 7, 8, 9, 13, and14 in accordance with Examiner's comments.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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By [signature]

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